

CLAIMS

What is claimed is:

1. A modular drive assembly for a sliding door, comprising:
 - a guide track having a hinge assembly slidably received therein;
 - a pair of pulleys disposed on either end of said guide track, said pair of guide pulleys being disposed adjacent to a path of travel of said hinge assembly within said guide track, said path of travel being defined by a closed door limit and an open door limit; and
 - a pair of cables each having an end that is secured to said hinge assembly and the other end is secured to a cable drum of a motor drive unit mounted to said guide track, said motor drive unit being configured to rotate said cable drum, wherein said cable drum is also capable of freely rotating within said motor drive unit when said motor drive unit is not rotating said cable drum, wherein rotation of said cable drum causes said hinge assembly to move in said guide track as one of said cables wraps onto said cable drum while the other one of said cables wraps off of said cable drum, wherein said hinge assembly passes a portion of one of said pair of pulleys when said hinge assembly is at said closed door limit and said hinge assembly passes a portion of the other one of said pair of pulleys when said hinge assembly is at said open door limit.
2. The modular drive assembly as in claim 1, wherein said guide track comprises a plurality of mounting studs for receipt in a plurality of openings in a structural panel of a vehicle.
3. The modular drive assembly as in claim 1, wherein said structural panel is a lower rocker panel of the vehicle and the guide track is a lower guide track and said modular drive assembly provides an opening and a closing force to the sliding door.

4. The modular drive assembly as in claim 1, wherein said modular drive assembly is secured to a vehicle as a single unit and the guide track is a lower guide track and said modular drive assembly provides an opening and a closing force to the sliding door.
5. The modular drive assembly as in claim 1, wherein said guide track comprises a curved portion, said curved portion corresponding to a portion of a periphery of a door opening in a vehicle.
6. The modular drive assembly as in claim 5, wherein said modular drive assembly is secured to a vehicle as a single unit and the guide track is a lower guide track and said modular drive assembly provides an opening and a closing force to the sliding door.
7. The modular drive assembly as in claim 1, wherein said guide track is configured to provide a lower track of the sliding door.
8. The modular drive assembly as in claim 7, wherein the height of said motor drive unit is no greater than the height of said guide track.
9. The modular drive assembly as in claim 8, wherein said modular drive unit is received with a cavity defined by said guide track.
10. The modular drive assembly as in claim 1, wherein said modular drive unit is received with a cavity partially defined by said guide track.
11. The modular drive assembly as in claim 1, wherein said guide track defines a channel on one side and said motor drive unit is mounted to an opposite side of the guide track.
12. The modular drive assembly as in claim 11, wherein the height of said motor drive unit is no greater than the height of said guide track.

13. The modular drive assembly as in claim 1, wherein said motor drive unit further comprises an electromagnetic clutch for engaging said cable drum to a rotating shaft of a motor of said motor drive unit and said cable drum is a single cable drum.

14. The modular drive assembly as in claim 1, wherein said hinge assembly comprises a roller portion slidably received within a channel of said guide track and a mounting portion pivotally mounted to said roller portion, said mounting portion adapted to be secured to the sliding door.

15. The modular drive assembly as in claim 1, wherein a first conduit is disposed between a housing of said motor drive unit and a housing of one said pair of pulleys and a second conduit is disposed between said housing of said motor drive unit and a housing of the other one said pair of pulleys.

16. The modular drive assembly as in claim 15, wherein a tensioner is disposed between said hinge assembly and said end of each of said cables, said tensioner allows an operative length of said cables to change as said hinge assembly travels within said path of travel.

17. The modular drive assembly as in claim 1, wherein a tensioner is disposed between said hinge assembly and said end of each of said cables.

18. The modular drive assembly as in claim 1, wherein said guide track comprises a plurality of mounting holes for securement of the drive assembly to a vehicle.

19. The modular drive assembly as in claim 1, further comprising:
a first roller assembly secured to said hinge assembly, said first roller assembly being configured to roll in said path of travel; and

a second roller assembly pivotally secured to said first roller assembly, said second roller assembly being configured to roll in said path of travel, wherein each of said pair of cables are secured to said second roller assembly.

20. A modular drive assembly for a sliding door of a vehicle, comprising:

a guide track having a hinge assembly slidably received therein, said guide track being configured to provide a center track for the sliding door;

a front pulley disposed on a forward end of said guide track, said front pulley being configured such that said front pulley does not protrude in a door opening of the vehicle any more than a portion of said guide track said front pulley is rotatably mounted to;

a pair of cables each having an end that is secured to said hinge assembly and the other end is secured to a single cable drum of the drive assembly, said single cable drum being located a rear end of said guide track; and

a guide pulley disposed proximate to said cable drum, wherein rotation of said cable drum causes said hinge assembly to move in a path of travel defined by said guide track as one of said cables wraps onto said cable drum while the other one of said cables wraps off of said cable drum, wherein said pulley changes the direction of one of said pair of cables as they wrap off of said cable drum, said path of travel being defined by an open door limit and a closed door limit.

21. The modular drive assembly as in claim 20, wherein said cable drum is configured to receive a drive portion of a motor drive unit, wherein the drive assembly is installed on an exterior of the vehicle and said motor drive unit is installed in an interior of the vehicle.

22. The modular drive assembly as in claim 20, wherein said guide track comprises a curved portion, said curved portion corresponding to a portion of a periphery of a door opening in the vehicle.

23. The modular drive assembly as in claim 20, wherein said guide track defines a channel on one side and a motor drive unit is mounted to said cable drum on an opposite side of the guide track.
24. The modular drive assembly as in claim 20, wherein said hinge assembly comprises a roller portion slidably received within a channel of said guide track and a mounting portion pivotally mounted to said roller portion, said mounting portion adapted to be secured to the sliding door.
25. The modular drive assembly as in claim 20, wherein a tensioner is disposed between said hinge assembly and said end of each of said cables, said tensioner allows an operative length of said cables to change as said hinge assembly travels within said path of travel.
26. The modular drive assembly as in claim 20, further comprising:
a first roller assembly secured to said hinge assembly, said first roller assembly being configured to roll in said path of travel; and
a second roller assembly pivotally secured to said first roller assembly, said second roller assembly being configured to roll in said path of travel, wherein each of said pair of cables are secured to said second roller assembly.
27. The modular drive assembly as in claim 26, wherein a tensioner is disposed between said second roller assembly and each of said pair of cables.
28. The modular drive assembly as in claim 26, wherein said first roller assembly and said second roller assembly are configured to be orthogonally positioned with respect to a path of travel defined by said guide track and said front pulley is not orthogonally positioned with respect to said path of travel.

29. The modular drive assembly as in claim 20, wherein a tensioner is disposed between said hinge assembly and said end of each of said cables.

30. The modular drive assembly as in claim 20, wherein said guide track comprises a plurality of mounting studs for securement of the drive assembly to the vehicle.

31. A method for installing a drive assembly to a vehicle, the drive assembly providing an opening and a closing force to move a sliding door of the vehicle, the method comprising:

providing a modular drive assembly comprising a lower guide track, said modular drive assembly providing the opening and the closing force for moving the sliding door, wherein said modular drive assembly comprises all of the necessary components for providing the opening and the closing force to the sliding door prior to the modular drive assembly being installed in the vehicle; and

installing said modular drive assembly into a mounting cavity of the vehicle by first sliding the modular drive assembly into the mounting cavity and then upwardly moving the modular drive assembly such that a plurality of mounting studs of the modular drive assembly are received within complimentary openings in a structural panel of the vehicle.